AMENDMENT TO THE CLAIMS:

Please cancel claims 1–20 without prejudice. Please add the following new claims:

21. (Newly Added) A voltage controlled oscillator (VCO) receiving positive and negative control voltages an oscillation frequency of a signal is based, the VCO comprising:

a storage capacitor linearly charged by a constant charge current and linearly discharged by a constant discharge current;

a comparator comparing a voltage on the storage capacitor to upper and lower threshold voltages, wherein an output of the comparator drops to a negative saturation voltage when the storage capacitor voltage exceeds one of the upper and lower threshold voltages and rises to a positive saturation voltage when the storage capacitor voltage exceeds the other of the upper and lower threshold voltages;

a constant charge current source injecting constant charge current to the storage capacitor when the comparator output rises to one of the positive and negative saturation voltages; and

a constant discharge current source draining constant discharge current from the storage capacitor when the comparator output drops to the other of the positive and negative saturation voltages.

22. (Newly Added) The VCO as set forth in Claim 21, wherein the comparator output is coupled to the VCO output.

23. (Newly Added) The VCO as set forth in Claim 22, wherein the constant charge current is determined by the positive control voltage.

24. (Newly Added) The VCO as set forth in Claim 23 wherein the constant discharge current is determined by the negative control voltage.

25. (Newly Added) The VCO as set forth in Claim 23, wherein the constant charge current source comprises a bipolar junction transistor having a base coupled to the positive control voltage, an emitter coupled to the comparator output via a load resistor, and a collector coupled to the storage capacitor.

26. (Newly Added) The VCO as set forth in Claim 23, wherein the constant discharge current source comprises a bipolar junction transistor having a base coupled to the negative control voltage, an emitter coupled to the comparator output via a load resistor, and a collector coupled to the storage capacitor.

27. (Newly Added) The VCO as set forth in Claim 22, wherein the constant charge current is determined by the negative control voltage.

28. (Newly Added) The VCO as set forth in Claim 27, wherein the constant discharge current is determined by the positive control voltage.

29. (Newly Added) The VCO as set forth in Claim 27, wherein the constant charge current source comprises a bipolar junction transistor having a base coupled to the negative control voltage, an emitter coupled to the comparator output via a load resistor, and a collector coupled to the storage capacitor.

30. (Newly Added) The VCO as set forth in Claim 27, wherein the constant discharge current source comprises a bipolar junction transistor having a base coupled to the positive control voltage, an emitter coupled to the comparator output via a load resistor, and a collector coupled to the storage capacitor.

31. (Newly Added) The VCO as set forth in Claim 21, wherein the comparator comprises:

an operational amplifier having a first input coupled to said storage capacitor;

a first resistor having a first terminal coupled to an output of the operational amplifier and a second terminal coupled to a second input of the operational amplifier; and

a second resistor having a first terminal coupled to ground and a second terminal coupled to the second input of the operational amplifier,

wherein the operational amplifier output is the comparator output.

32. (Newly Added) The VCO as set forth in Claim 21, wherein the constant charge current is determined by a difference between the positive saturation voltage and the positive control voltage and the constant discharge current is determined by a difference between the negative saturation voltage and the negative control voltage.

33. (Newly Added) A processing system including the VCO according to claim 21, the processing system comprising:

a clocked circuit operating at a frequency defined by an external clock signal; and

a phase-locked loop coupled to the clocked circuit and supplying the external clock signal, the phase-locked loop comprising:

a frequency divider dividing a frequency of the external clock signal by N;

a phase detector detecting a phase difference between a frequency divided output of the frequency divider and an input reference signal and generating a phase difference signal based upon the detected phase difference;

a charge pump and loop filter circuit converting the phase difference signal to the positive and negative control voltages; and

the VCO.